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US Army Corps of Engineers®
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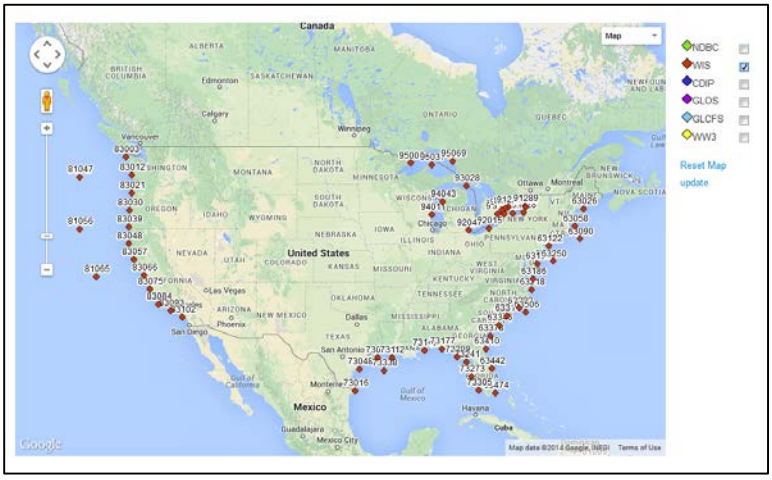
WaveNet

Description

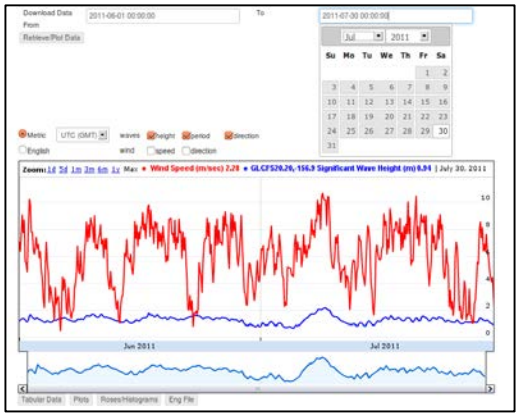
WaveNet is a web-based, Graphical-User-Interface (GUI) data management tool developed for the Corps' coastal modeling and planning missions that accesses, processes, and analyzes meteorological-oceanographic (metocean) data (winds, waves, tides, water levels). It accesses wave andwind data from different data sources and provides a combination of analysis and graphical tools to minimize the complexity and uncertainty of data processing in USACE project applications. Users can extract, download, analyze, and prepare input files for numerical wave models and tabular and graphical information for project planning and reporting for further analysis. The built-in analyses in WaveNet allow users to check the availability, as well as the quality and consistency of data and types of processing methods applicable. The home page of the WaveNet map in the image shows six data sources WaveNet uses to provide data to users. These are the National data Buoy Center (NDBC),Wave Information Studies (WIS), Coastal Data Information Program (CDIP), Great Lakes Observing System (GLOS), Great Lakes Coastal Forecasting System (GLCFS), and WaveWatch 3 (WW3) databases.



WaveNet home page

Issue Addressed

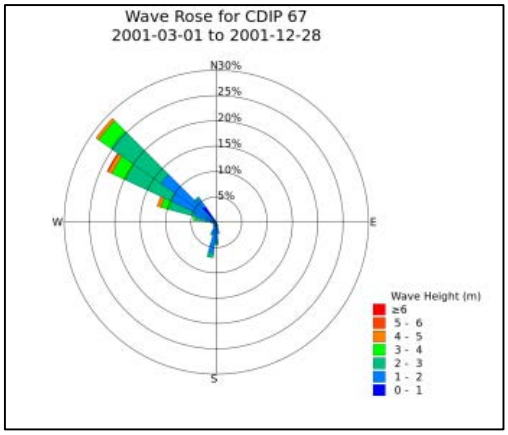
WaveNet addresses a basic need of USACE engineers and planners in planning, design and operation of coastal navigation and flooding projects. It acquires large sets of oceanographic data and employs techniques to minimize the complexity and uncertainty of data processing. WaveNet is a decision-support tool that provides wave and wind data required for coastal, ocean, and marine engineering applications, facilitates conversion of data used in input files by numerical wave models, and generates tabular and graphical information for project planning and design documents.



Time series of wave height and wind data

Products

The WaveNet is a web-based GUI designed to provide users with a GIS mapping tool to query and select metocean data sources according to the desired geographic region. It uses the Google Map interface to display data from different sources, and employs a combination of Fortran, Python and Matlab codes to process and analyze data for USACE applications.

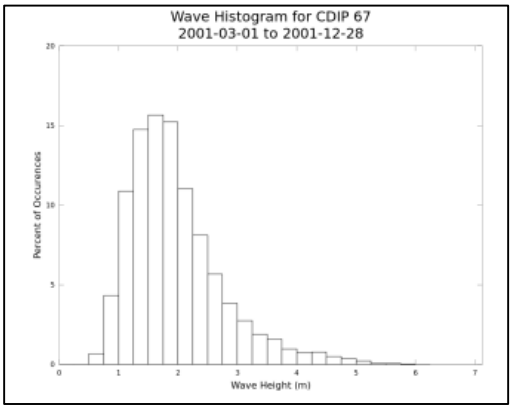


Application of Products

Recent project applications for WaveNet include: Ambrose Entrance Channel, NY; Braddock Bay, NY; Tangier Island, VA; Sand Island, WI; Kikiaola and Hilo harbors, HI; Dana Point Harbor, CA; Tillamook Bay, OR; Grays Harbor, WA; Cape Canaveral, FL.

Projected Benefits

WaveNet is employs a Google Map interface to query, select, and display data for a given geographic region from the different sources available. Users can select project-specific date range to query the availability of data; plot, analyze, and extract data; post-process to produce tabular data and plots in a desired format, and generate input files for in-house numerical modeling studies. WaveNet helps USACE users to obtain statistically consistent wave parameters such as significant wave height, peak period, and direction and generates wave and wind roses and histograms of directional wave data required to define the wave climate for Corps projects.



Documentation

Five published technical notes describe various features of WaveNet GUI, its operation, characteristics of different data sources, and analysis capabilities available in WaveNet. Technical notes are available from the CIRP website.

Points of Contact

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CIRP Website

- Please see the CIRP website to download documentation: http://www.erdc.usace.army.mil/Missions/WaterResources/CIRP/Publications.aspx
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